Kary Myers

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Professional Experience

2006 -	**Los Alamos National Laboratory**, Los Alamos, New Mexico Scientist, Statistical Sciences Group
2001	**WhizBang! Labs Research**, Pittsburgh, Pennsylvania Graduate Research Intern
1999, 2000	**AT&T Shannon Labs**, Florham Park, New Jersey Graduate Research Intern, Artificial Intelligence Department

Education

	Carnegie Mellon, Pittsburgh, Pennsylvania
2006	Ph.D., Statistics Department *Thesis:* Developing Models to Reveal Brain Activation in Massive Neuroimaging Datasets
2002	M.S., Machine Learning Department *Master's project:* A Boosting Approach to Topic Spotting on Subdialogues
1999	B.S. with University and College Honors, Statistics Department (Computer Science Minor) *Honors thesis:* Finding Galactic Clusters in Massive Astrophysical Datasets

Honors and Awards

2012, 2011, 2007	Los Alamos Achievement Award
2011	Early Career Scholarship, Isaac Newton Institute for Mathematical Sciences
2011	Certificate of Appreciation, ASA Section on Physical and Engineering Sciences
1999-2005	AT&T Labs Fellowship
2004	Student Paper Competition Winner, Statistical Computing and Graphics Sections of the American Statistical Association
2005, 2004	Student Scholarship, Spring Research Conference on Statistics in Industry and Technology
2004	Outstanding Reviewer Award, American College of Gastroenterology
1999-2003	Carnegie Scholars Program Fellowship
1999	Election to Phi Beta Kappa, Phi Kappa Phi, and Sigma Xi
1999	Richard Schoenwald Phi Beta Kappa Undergraduate Research Prize
1999	Lucent Technologies First Prize, Sigma Xi Undergraduate Research Competition

Publications and Presentations

Journal Articles

2012 T. Burr, A. Bakel, S. Bryan, K. Budlong-Sylvester, J. Damico, S. Demuth, M. Ehinger, H. Garcia, J. Howell, S. Johnson, J. Krebs, **K. Myers**, C. Orton, M. Thomas. Roles for Process Monitoring in Nuclear Safeguards at Aqueous Reprocessing Plants. *Journal of Nuclear Materials Management*, 40(2), 42-53.

2011 D.I. Moody, S.P. Brumby, **K.L. Myers**, N.H. Pawley. RF transient signal classification using sparse representations over adaptive dictionaries. *SPIE Annual Meeting 2011*, San Diego.

2011 D.I. Moody, S.P. Brumby, **K.L. Myers**, N.H. Pawley. Classification of transient signals using sparse representations over adaptive dictionaries. *Proceedings of SPIE*, **8058**, Orlando, FL.

2010 S. Brumby, **K. Myers**, and N. Pawley. Capturing dynamics on multiple time scales: A multilevel fusion approach for cluttered electromagnetic data. *SPIE Defense, Security, & Sensing*.

2009 N. Pawley, **K. Myers**, J. Galbraith, and S. Brumby. Capturing dynamics on multiple time scales: A hybrid approach for cluttered electromagnetic data. *43rd Asilomar Conference on Signals, Systems, and Computers*.

2009 T. Burr and **K. Myers**. Effects of background suppression of gamma counts on signal estimation. *Applied Radiation and Isotopes*, **67**, 1729-1737.

2008 T. Burr and **K. Myers**. Signatures for several types of naturally occurring radioactive material. *Applied Radiation and Isotopes*, **66**, 1250-1261.

2007 **K.L. Myers**, A.E. Brockwell, and W.F. Eddy. State-space models for optical imaging. *Statistics in Medicine*, **26**, 3862-3874.

2007 T. Burr, J.R. Gattiker, **K. Myers**, and G. Tompkins. Alarm criteria in radiation portal monitoring. *Applied Radiation and Isotopes*, **65**, 569-580.

2004 **K. Myers**. The billion byte brain: Combining physiological data and gigabytes of images to improve maps of brain activity. *2004 Proceedings of the American Statistical Association*.
⟶Winner, Statistical Computing and Graphics Sections Student Paper Competition

2000 **K. Myers**, M. Kearns, S. Singh, and M.A. Walker. A boosting approach to topic spotting on subdialogues. *Proceedings of the Seventeenth International Conference on Machine Learning*, 655-662.

Technical Reports

2010 N.H. Pawley, **K.L. Myers**, J.P. Layne, and R.J. Nemzek. Analysis of RF signatures from multiple DOE foundries. Los Alamos National Laboratory Technical Report LA-CP-10-01600.

2010 R.J. Nemzek, T.D. Hamlin, S.C. Bender, J.P. Layne, **K.L. Myers**, N.H. Pawley, and R.W. Wysor. Propagation of emissions from the 3/P-DUT under differing power configurations during the Kazoo-3 test. Los Alamos National Laboratory Technical Report LANL-NISC-10-0036.

2010 N.H. Pawley, R.J. Nemzek, **K.L. Myers**, and T.D. Hamlin. Variation of RF

signatures with simultaneous operation of multiple V-DUTs. Los Alamos National Laboratory Technical Report LANL-NISC-10-20.

2010 **K.L. Myers**, R.J. Nemzek, N.H. Pawley, and T.D. Hamlin. Variation of RF signatures across ten V-DUTs. Los Alamos National Laboratory Technical Report LANL-NISC-10-0009.

2010 **K.L. Myers**, N.H. Pawley, and R.J. Nemzek. V-DUT Pseudostacking: Understanding the limitations imposed by unit-to-unit variability in an idealized stacking scenario. Los Alamos National Laboratory Technical Report LANL-NISC-10-0010.

2009 R.J. Nemzek, T.D. Hamlin, **K.L. Myers**, and N.H. Pawley. Spectral prescriptions for DUTs used in the Kazoo and INL test campaigns. Los Alamos National Laboratory Technical Report LANL-NISC-09-0215.

2009 R.J. Nemzek, S. Bender, T.D. Hamlin, J. Layne, **K.L. Myers**, and N.H. Pawley. LANL RF measurements during the Kazoo-2 campaign. Los Alamos National Laboratory Technical Report LANL-NISC-09-0216.

Other Articles

2008 **K. Myers**. Strategies for pursuing graduate school fellowships. *International Society for Bayesian Analysis Bulletin*, **15**(2).

2007 W.F. Eddy, R. McNamee, and **K.L. Myers**. Imaging the living brain. *CHANCE*, **20**(4).

Selected Invited Presentations

2010, 2011, 2012 *Malt Balls or Malt Beer? Detecting the Prohibited Operation of Dual-Use Facilities.* Lawrence Livermore National Laboratory; Kansas State; Carnegie Mellon; Simon Fraser University; Universität Augsburg Institut für Mathematik.

2009 *Same or Different? Identifying Similarities and Computing Distances Between Images.* Joint Statistical Meetings, Washington, DC.

2007 *Learning from Neuroscience Data* (with Rob Kass). Summer Workshop in Neuroimaging, Center for the Neural Basis of Cognition, Pittsburgh, Pennsylvania.

2005 *Developing Models to Reveal Brain Activation in Massive Neuroimaging Datasets.* Spring Research Conference on Statistics in Industry and Technology, Park City, Utah.

2005 *Revealing Brain Activity with Filters.* ENAR Spring Meeting, Austin, Texas.

2004 *Brains on Film: Using Optical Imaging to Build Maps of Brain Activity.* Interface 2004, Baltimore, Maryland.

2004 *The Billion Byte Brain: Combining Physiological Data and Gigabytes of Images to Improve Maps of Brain Activity.* Center for Automated Learning and Discovery Research Day, Carnegie Mellon.

2002 *The Progression of Occupational Asthma: Assessing Data Quality for Studying Changes in Nasal Airway Volume Via Magnetic Resonance Imaging of Mice.* Statistics Department, Carnegie Mellon.

2001 *And the Winner Is... Extracting Information from Sports Recaps.* WhizBang! Labs Research, Pittsburgh, Pennsylvania.

2000 *Who Is John Galt? Machine Learning for Extraction of Biographies from Text.* AT&T Shannon Labs, Florham Park, New Jersey.

1999 *Finding Galactic Clusters in Massive Astrophysical Datasets.* Center for Automated Learning and Discovery Corporate Members Meeting, Carnegie Mellon.

1999 *Probabilistic Methods for Robotic Landmine Search.* Sigma Xi Undergraduate Research Competition, Carnegie Mellon.

Research Areas

Selected Los Alamos Research

MATADOR: Methods for Analyzing Temporal Activity from Data Observed Remotely
Leading a 2-lab effort to detect and characterize prohibited operation of multi-use facilities. Building on functional data analysis and bioinformatics techniques.

DAIS-E: Data Analysis In-Situ Engine
Developing statistical methods to incorporate in an in-situ simulation pipeline in order to identify interesting results as they arise during the simulation run.

Synthetic Dataset Development for Electromagnetic Signatures
Involved in the formation of a 4-lab effort to model electromagnetic emissions and signatures. Apply statistical approaches to the tasks of model validation and data set generation.

Exploitation of Radiofrequency Signatures
Provided statistical and algorithm expertise to detect and quantify signatures in radiofrequency measurements.

Cyber Quantitative Risk Initiative
Developed a quantitative, risk-based approach for protecting information systems at Los Alamos National Laboratory by incorporating information from both qualitative and quantitative data sources.

Image Metrics
Developed metrics for comparing experimental images to simulated images.

Radiation Portal Monitoring
Tested several methods for accounting for background suppression when using gamma detectors at border crossings to detect illicit nuclear material.

Graduate Research

Making Maps of Brain Activation with Optical Imaging Data
Thesis research. Identifying and modeling physiological and instrumental sources of noise in optical imaging data in order to make better maps of brain activity.

Magnetic Resonance Imaging for Studying Changes in Nasal Airway Volume
Identified areas for improving experimental design and magnetic resonance imaging technique in a study of mice exposed to isocyanates.

Maximum Entropy Markov Models for Part-of-Speech Tagging
Wrote software using maximum entropy Markov models (McCallum et al., 2000) to assign part-of-speech tags to words in a body of text.

Machine Learning for Extraction of Biographies from Text
Explored the task of augmenting a question answering system with a means of identifying descriptive text that could answer "Who is *X*?"

A Boosting Approach to Topic Spotting
Examined ways of using BoosTexter (Schapire & Singer, 2000) with the Switchboard corpus of spontaneous speech to develop an end-to-end system for topic spotting.

Undergraduate Research

Finding Galactic Clusters in Massive Astrophysical Datasets
Senior honors thesis. Worked with a team of astrophysicists, statisticians, and computer scientists to develop technologies for real-time clustering of galactic data from digital sky surveys.

Probabilistic Robotic Search for Landmines
Developed probabilistic methods to guide a robotic search of a landmine field, incorporating sensor input and pre-existing knowledge of minefield patterns.

Causal Inference in Clinical Data
Wrote software to automate methods for computing probabilities of counterfactual queries ("Would the patient have survived if treated at home?").

Activities and Service

2012	**Chair**, Conference on Data Analysis (CoDA)
2012-	**Associate editor**, *Annals of Applied Statistics*
2011-	**Production editor**, *Bayesian Analysis*,
2010-	**Editor**, *CHANCE* magazine.
2012-2013	**Program chair** (elected), Section on Statistical Graphics, American Statistical Association, 2012 (chair elect), 2013 (chair).
2010-2011	**Program chair** (elected), Section on Physical and Engineering Sciences, American Statistical Association, 2010 (chair elect), 2011 (chair).
2010	**Program chair** (appointed), Council of Chapters, American Statistical Association.
2009	**Student Award Selection Committee Member**, Section on Bayesian Statistical Science, American Statistical Association.
2008-2009	**Peer reviewer**, National Institutes of Health: Infectious, Reproductive, Asthma, and Pulmonary (IRAP) and Neurological, Aging and Musculoskeletal Epidemiology (NAME) Study Sections.
2008	**Instructor**, Expanding Your Horizons Los Alamos.
2007	**Co-chair**, Quality and Productivity Research Conference.
2007	**Organizer**, Special Award of the American Statistical Association, Intel International Science & Engineering Fair.
2004-	**Reviewer**, *Technometrics*, *The American Statistician*, *Optical Engineering*, *Journal of Computational Neuroscience*, *American Journal of Gastroenterology*.

Professional Memberships

Phi Beta Kappa, Phi Kappa Phi, American Statistical Association, Sigma Xi Scientific Research Society, INFORMS, MORS

Computing Skills

R, S-PLUS, MATLAB, C++, C, Java, Python, Perl, some shell scripting.